

## IN THE CLAIMS

1-9. Canceled.

1 10. (original) A method for recording and processing vibratory source seismic data,  
2 the method comprising:

- 3 (a) generating a cascaded sweep sequence comprising  $N$  sweep segments  
4 that are either concatenated or overlapping sequentially, where  $N$  is equal  
5 to or greater than 2, said  $N$  sweep segments being substantially identical,  
6 except that the initial phase angles of said  $N$  sweep segments are  
7 progressively rotated by a constant phase increment of about  $2 m \pi / N$   
8 radians where  $m$  is an integer and  $|m| > 1$ ;  
9 (b) using said cascaded sweep sequence to drive a vibratory source thereby  
10 propagating a seismic wave into the earth at a selected location;  
11 (c) recording a groundforce signal associated with said seismic wave,  
12 (d) recording at least one reflection signal from a location within the earth  
13 responsive to said seismic wave, and  
14 (e) using said recorded groundforce signal for processing the signal recorded  
15 to produce a processed signal.

1 11. (original) The method of claim 10 wherein processing the signal recorded  
2 comprises cross-correlating the recorded signal with a signal comprising said  
3 groundforce signal and a first and a last sweep segment of said groundforce  
4 signal.

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1 12. The method of claim 10, wherein said sweep segments further comprise a  
2 sinusoidal wavetrain having a frequency that either increases monotonically with time or  
3 decreases monotonically with time.

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1 13. The method of claim 12 wherein said increase or decrease of said frequency is  
2 linear with time.

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1 14. The method of claim 10, wherein said sweep segments further comprise a psuedo-  
2 random sweep series

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15-38 Canceled.